Portland Harbor

EPA Public Information Session for the Draft Feasibility Study

St Johns Community Center

April 2012

Superfund – CERCLA

Comprehensive Environmental Response Compensation and Liability Act

- enacted by congress in 1980

Portland Harbor

Portland Harbor Superfund Site

Study Area

Portland Harbor EPA Team

- Oregon Department of Environmental Quality
  - Lead agency for upland source control efforts
  - Support agency for in-water RI/FS
- Natural Resource Trustees
  - Indian Tribes – Nez Perce, Umatilla, Warm Springs, Yakama, Siletz, Grand Ronde
  - Department of the Interior/Fish and Wildlife Service
  - National Oceanic Atmospheric Administration (NOAA)
  - Oregon Department of Fish and Wildlife

Background

- Long history of industrial use and changes to river system

- Supports industrial and recreational uses

- Federal navigation channel

- River provides habitat and serves as a migratory corridor for ESA listed species

- Numerous contaminants, sources and source types

- Lower Willamette Group (LWG) is conducting RI/FS; large number of PRPs and government partners

- Natural Resource Trustees - NRDA underway

Portland Harbor Superfund Milestones

We are here

2000– – – – → 2010   2012   2013   2014

2000-11
•Superfund Listing, Research, Sampling, Analysis, Early Actions, Uplands Cleanup

Remedial Investigation (RI) and Risk Assessment
What and where are the risks?

Draft Feasibility Study (FS)
What are the clean-up options?
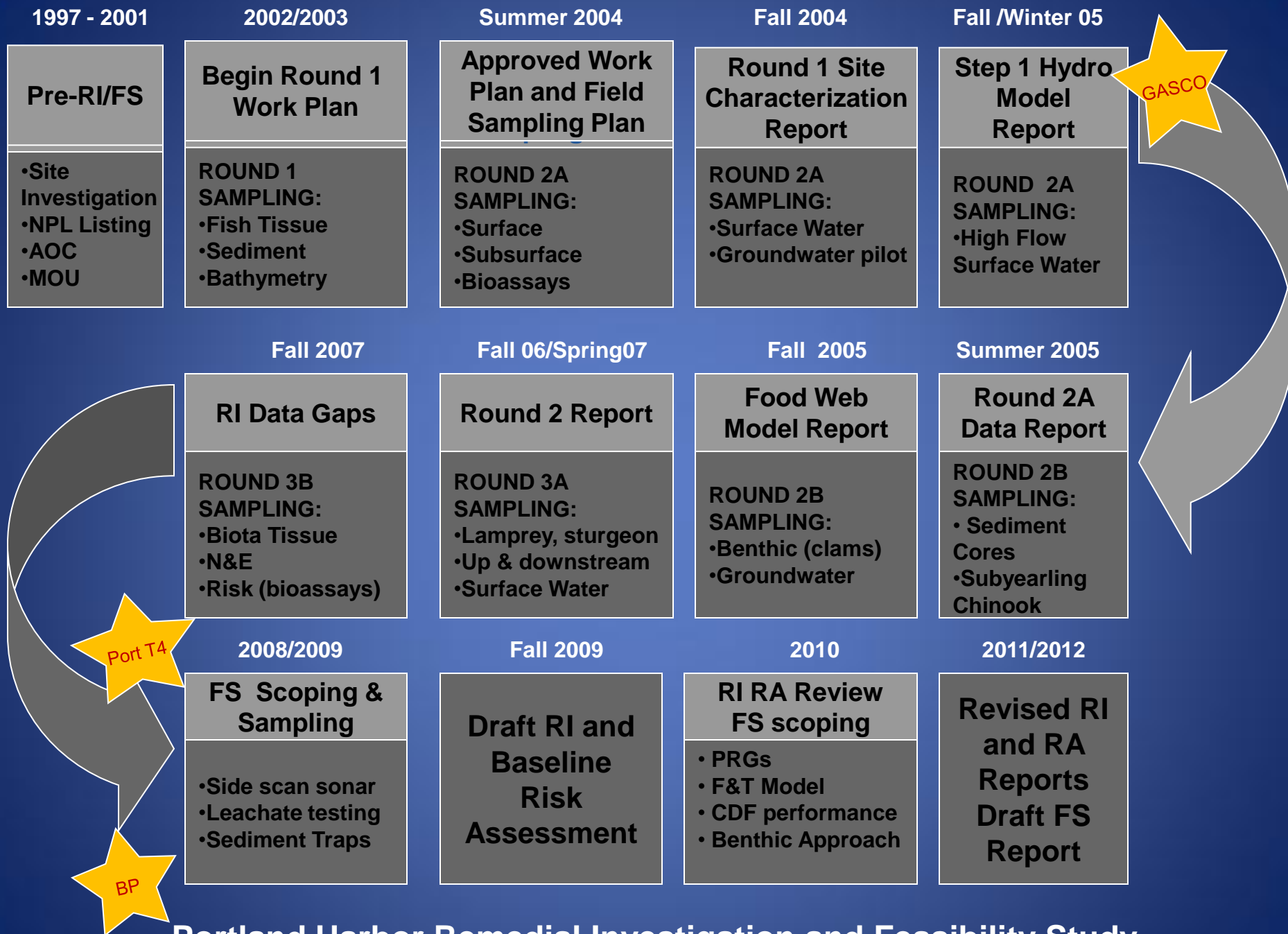
EPA's Proposed Clean-up Plan

EPA's Record of Decision (ROD)
EPA's Final Decision

•**Public presentations on Draft RI/FS**
•*EPA comments & revisions to RI/FS*

•**Formal Public Comment**
•*State Concurrence*

Harbor Cleanup

1997 - 2001	2002/2003	Summer 2004	Fall 2004	Fall /Winter 05
Pre-RI/FS	**Begin Round 1 Work Plan**	**Approved Work Plan and Field Sampling Plan**	**Round 1 Site Characterization Report**	**Step 1 Hydro Model Report**
•Site Investigation •NPL Listing •AOC •MOU	ROUND 1 SAMPLING: •Fish Tissue •Sediment •Bathymetry	ROUND 2A SAMPLING: •Surface •Subsurface •Bioassays	ROUND 2A SAMPLING: •Surface Water •Groundwater pilot	ROUND 2A SAMPLING: •High Flow Surface Water

GASCO

Fall 2007	Fall 06/Spring07	Fall 2005	Summer 2005
RI Data Gaps	**Round 2 Report**	**Food Web Model Report**	**Round 2A Data Report**
ROUND 3B SAMPLING: •Biota Tissue •N&E •Risk (bioassays)	ROUND 3A SAMPLING: •Lamprey, sturgeon •Up & downstream •Surface Water	ROUND 2B SAMPLING: •Benthic (clams) •Groundwater	ROUND 2B SAMPLING: • Sediment Cores •Subyearling Chinook

Port T4

2008/2009	Fall 2009	2010	2011/2012
FS Scoping & Sampling	**Draft RI and Baseline Risk Assessment**	**RI RA Review FS scoping**	**Revised RI and RA Reports Draft FS Report**
•Side scan sonar •Leachate testing •Sediment Traps		• PRGs • F&T Model • CDF performance • Benthic Approach	

BP

Portland Harbor Remedial Investigation and Feasibility Study
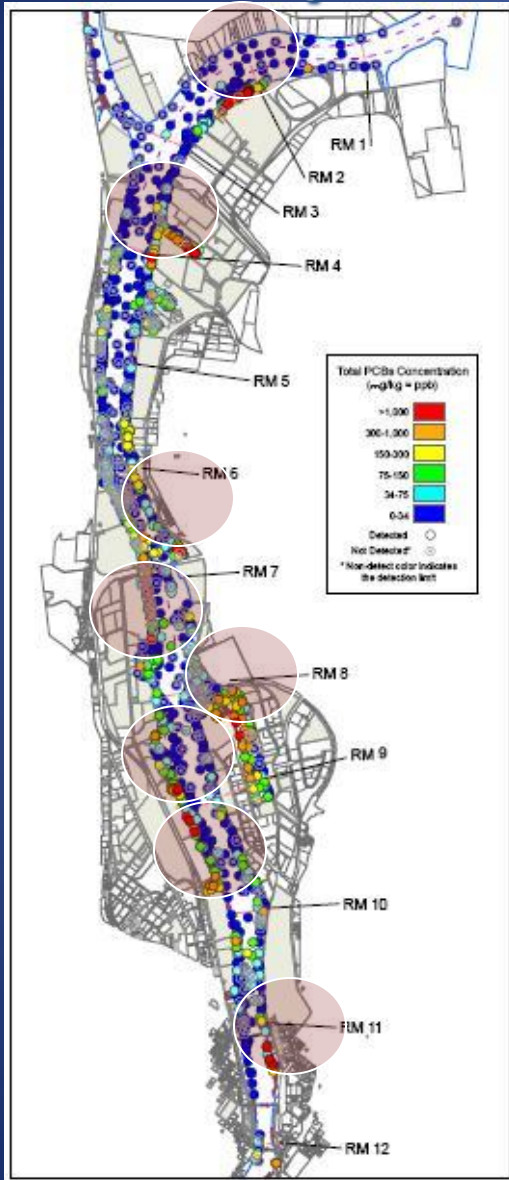
Early Actions

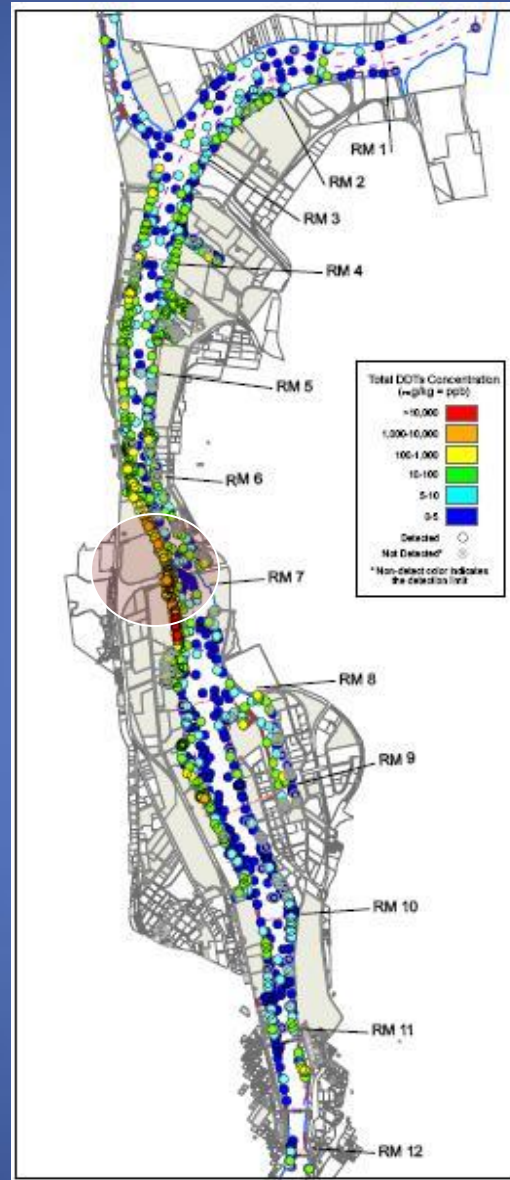GASCO – After

Terminal 4 – After

Remedial Investigation

- Site is well characterized – nature and extent of contamination, physical system

- Data demonstrates relationship between sediment, surface water, tissue and upland sources

- Contamination generally higher near shore compared to navigation channel
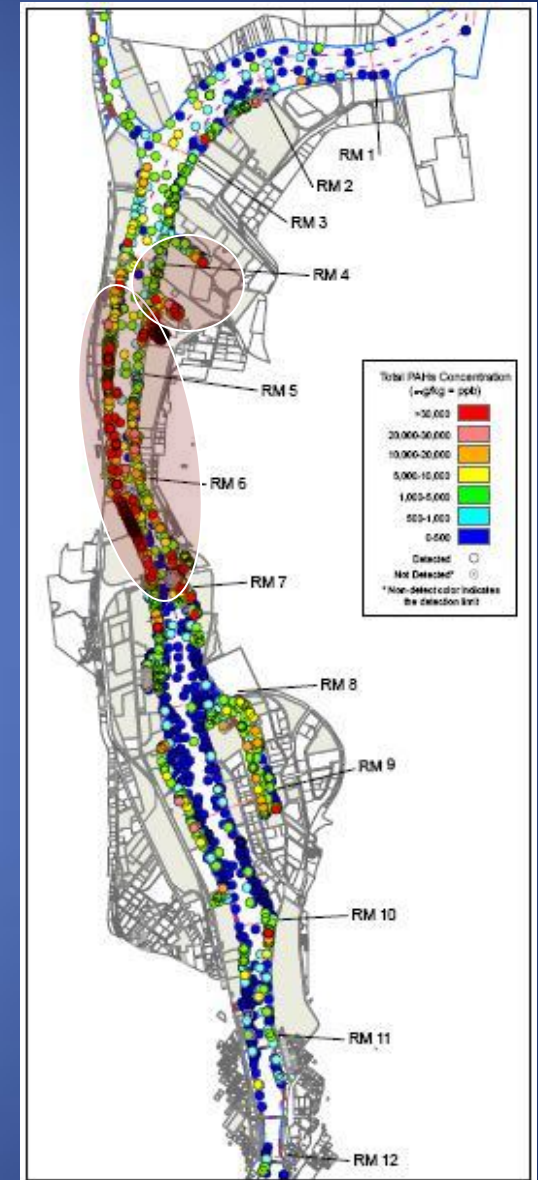
- Contamination *generally* higher at depth

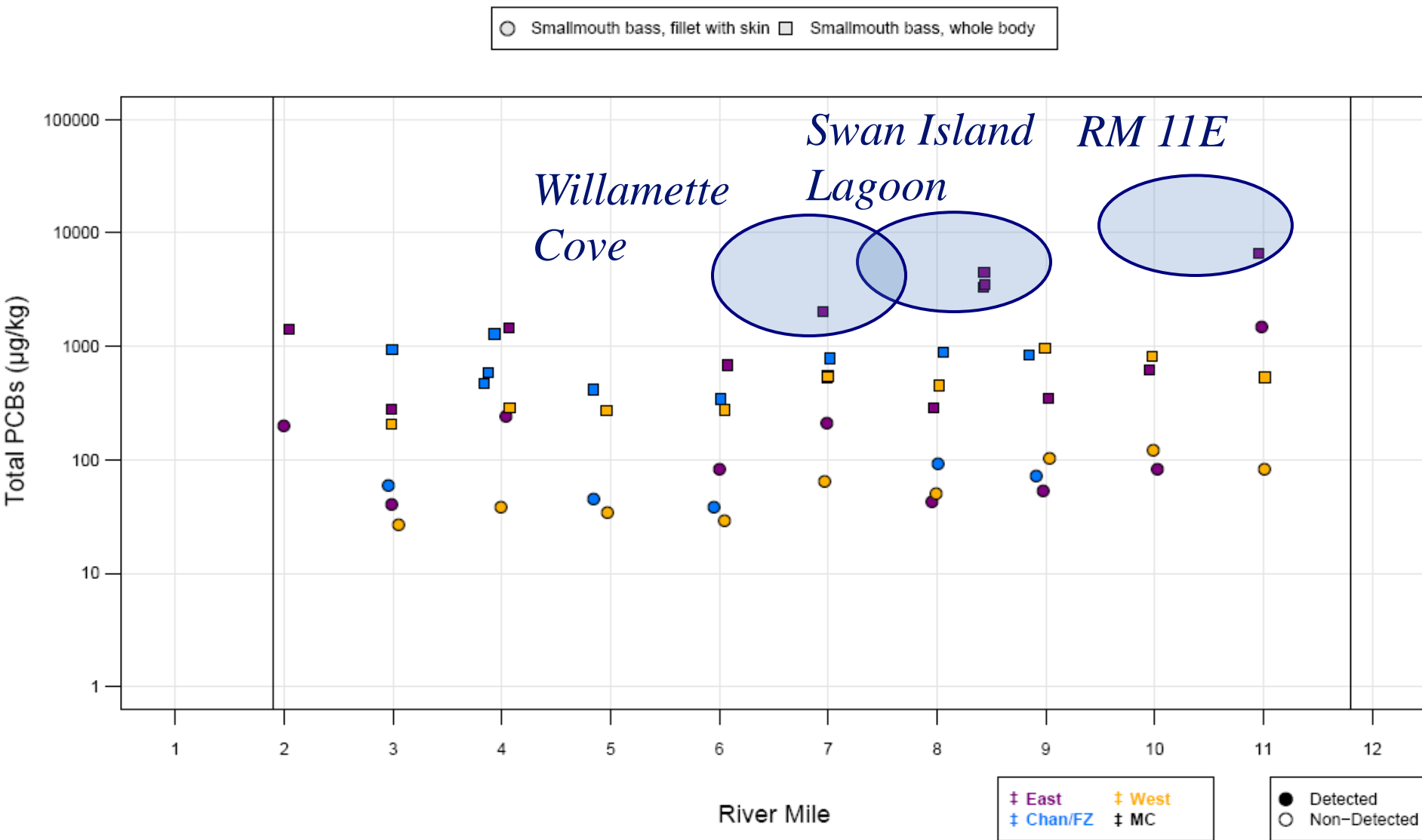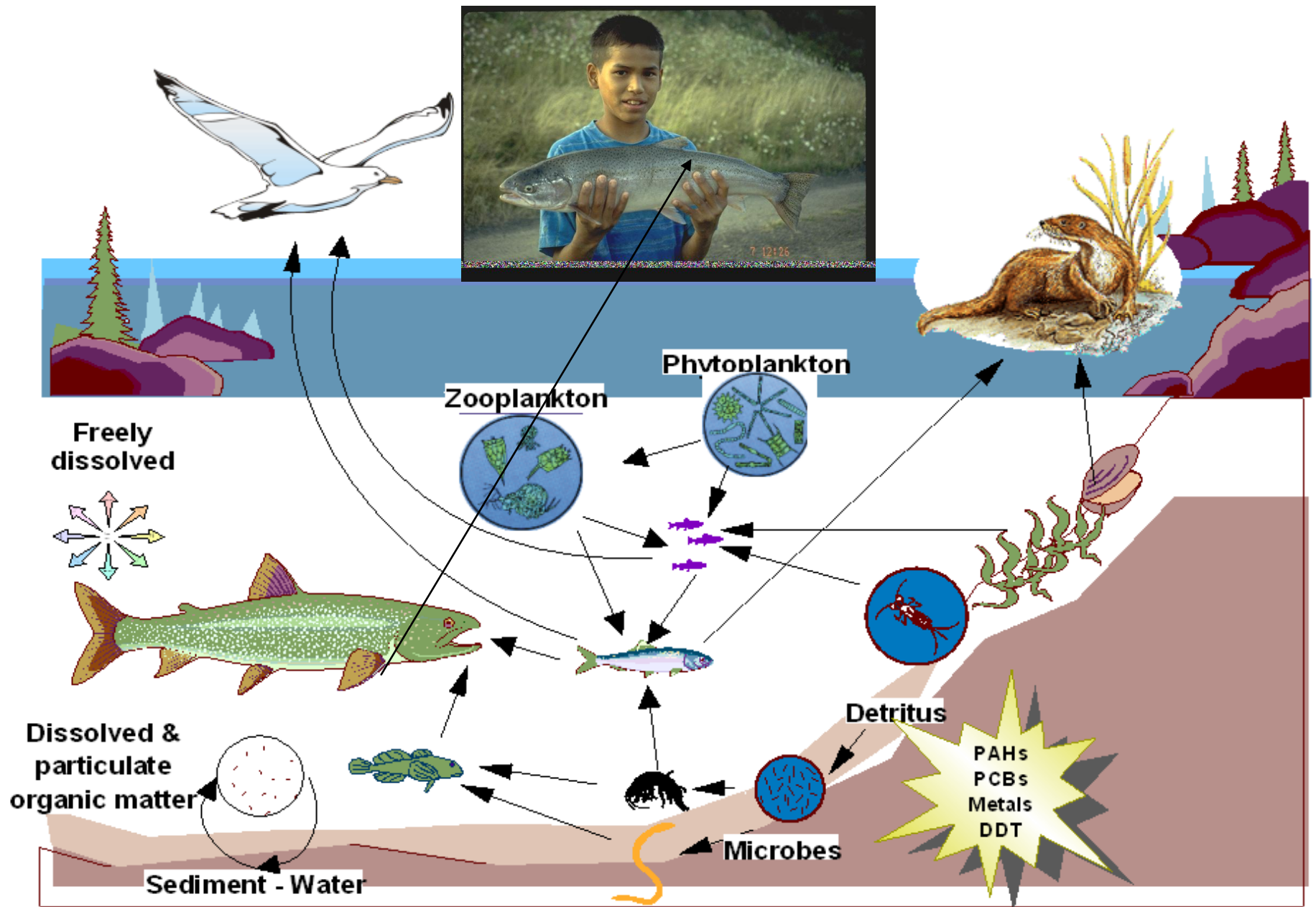# Examples of Contaminant Distribution
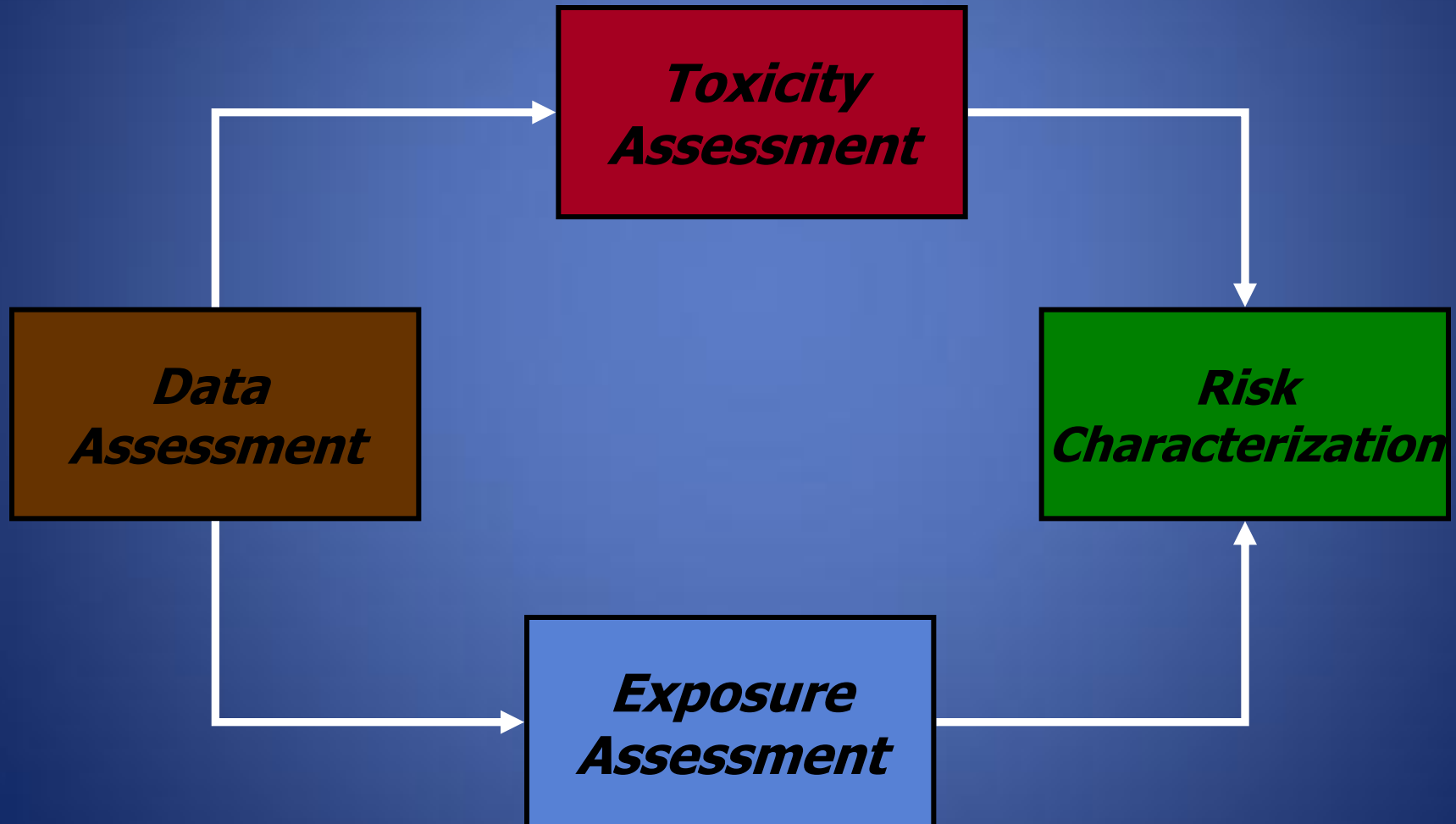

Total PCBs

Total DDx

Total PAHs

Total PCBs in Smallmouth Bass

Freely
dissolved

Phytoplankton

Zooplankton

Dissolved &
particulate
organic matter

Detritus

PAHs
PCBs
Metals
DDT

Microbes

Sediment - Water

Steps in Risk Assessment Process

How do we get there?

$$\text{Risk} = \text{Concentration} * \frac{(IR * EF * ED)}{BW*AT} * TF$$

| Risk Characterization | Data Assessment | Exposure Assessment | Toxicity Assessment |

Human Health
Exposure Scenarios for Evaluation

	Ingestion and Dermal Adsorption	In-water Sediment Ingestion and Dermal Adsorption	Surface Water Ingestion and Dermal Adsorption	Groundwater Seeps Ingestion and Dermal Adsorption	Fish/ Shellfish Ingestion	Infant Consumption of Human Milk
Workers	○	○				○
Transients	○		○	○		
Beach Users	○		○			
Fishers	○	○			○	○
Divers		○	○			○
Domestic Users			○			

Human Health Risk Assessment

- 19 risk driver contaminants; many are co-located

- PCBs and Dioxin most widespread, PAHs and DDX high localized risk

- Fish consumption – highest risk

- Children and infants

Ecological Risk Assessment

- Many Lines of Evidence on ecological risks, including:
  - Dietary ingestion of contaminants by birds, mammals and fish
  - Direct measurement of sediment toxicity
  - Bioaccumulation of contaminants into tissues of bird eggs, fish, and benthic invertebrates
- Risks to 20 species (e.g. mink) or groups (e.g. aquatic plants) selected as representative and evaluated

What Chemicals Pose the Greatest Ecological Risks at Portland Harbor?

- PCBs pose risks to the largest number of ecological receptors

- PAHs pose risks across large proportion of the site

- DDx among chemicals most associated with toxicity in benthic invertebrates

Risk Management

- Considers uncertainties in risk assessments and models
- EPA will be reviewing how LWG risk management assumptions have been used in the draft FS
- Risks will be reduced through variety of options – dredging, capping, treatment, natural recovery, and enhanced natural recovery

End of Pre-FS presentation Slides

Community Involvement

- Three more information sessions scheduled
- Portland Harbor Community Advisory Group monthly meetings
- Regular e-mail updates to over 1000 people with information about the investigation and cleanup
- Project team presentations to a wide variety of stakeholders and audiences.
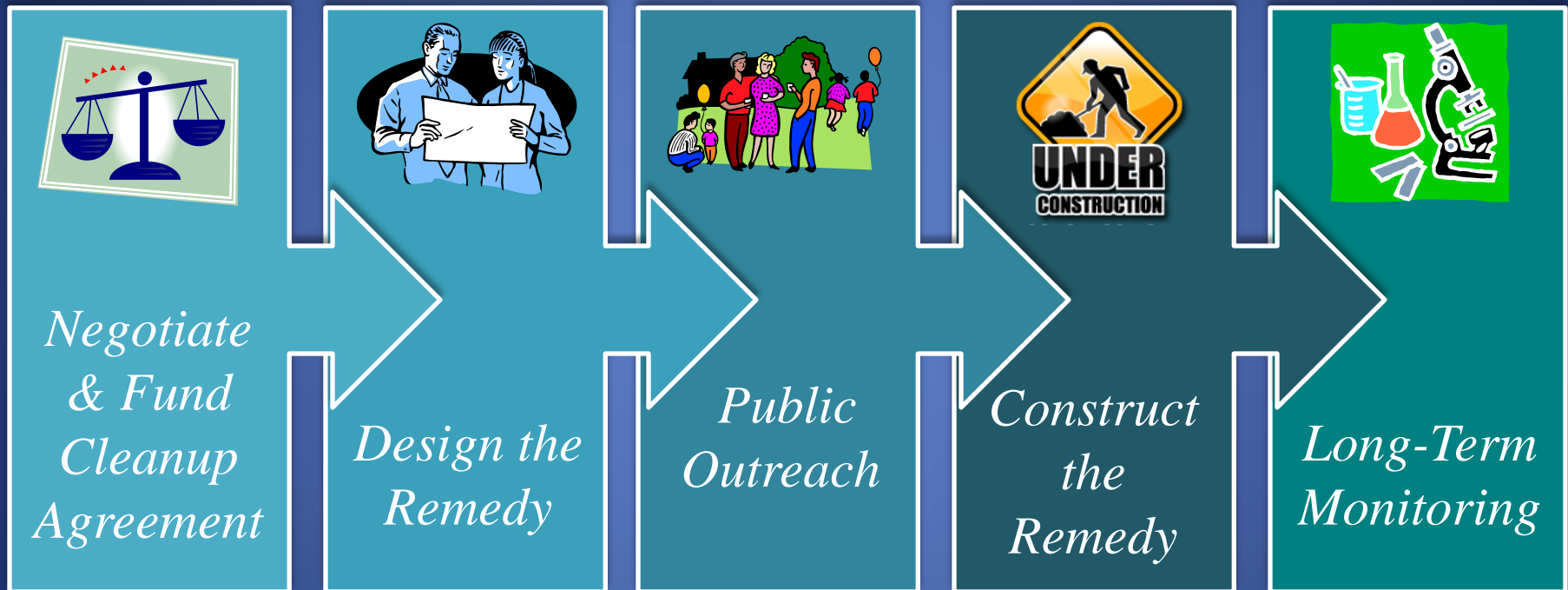
Selection of the Remedy

- Assessment of alternative approaches for cleanup based on nine criteria

- Risk management decision on most appropriate solution

- Proposed Plan - based on RI/FS and Administrative Record for review/comment

- Review public comment, consult with State, select remedy

FS to ROD

- EPA review of Draft Feasibility Study – 2012
  - Public outreach
  - Adequate basis for remedy selection
  - Comment/Revisions/Final FS
- Proposed Plan development
  - National Remedy Review Board/CSTAG review
  - Tribal consultation
- Proposed Plan – public comment - 2013
- Record Of Decision (2014?)

After the Record of Decision

2013 and beyond →

Negotiate & Fund Cleanup Agreement → **Design the Remedy** → **Public Outreach** → **Construct the Remedy** → **Long-Term Monitoring**

Continuing Upland Source Control and Monitoring →